WHAT IS CLAIMED IS:

1. An optical pickup device comprising:

a light source;

a light-concentrating optical system for concentrating a light beam emitted from the light source on a recording surface of an optical disk;

an optical element means for splitting the light beam that has been reflected on the recording surface and has passed through the light-concentrating optical system;

a light-receiving means for receiving a split light beam from the optical element means and measuring quantities of light of the split light beam; and

an aberration signal generating means for generating an aberration signal that represents an aberration of the light-concentrating optical system based on a quantity of light of a portion near an optical axis and a quantity of light of a portion separated from the optical axis, the light beam of which has been formed through splitting by the optical element means and incident on the light-receiving means as a first light beam.

2. An optical pickup device as claimed in claim 1, further comprising:

a focal shift signal generating means for generating a focal shift signal by using the aberration signal based on the quantity of light measured by the

light-receiving means.

3. An optical pickup device as claimed in claim 1, wherein

the optical element means generates the first light beam by splitting the light beam that has passed through the light-concentrating optical system along a first straight line that is perpendicular to the optical axis of the light beam and serves as a boundary and guiding the first light beam to the light-receiving means,

the light-receiving means comprises third and fourth regions,

the third region and the fourth region are provided approximately linearly symmetrical with respect to an axis of symmetry of a straight line that extends through the optical axis of the first light beam and is located on the light-receiving means corresponding to a first straight line,

the third region and the fourth region are arranged in positions located apart from the optical axis of the first light beam, and

the aberration signal generating means generates the aberration signal by using a difference between electric signals from the third region and the fourth region.

4. An optical pickup device as claimed in claim 3,

wherein

the optical element means generates a second light beam by splitting the light beam that has passed through the light-concentrating optical system along a second straight line perpendicular to the optical axis of the light beam and serves as a boundary and guiding the second light beam to the light-receiving means,

the light-receiving means comprises first and second regions,

the first region and the second region are provided approximately linearly symmetrical with respect to an axis of symmetry of a straight line that extends through the optical axis of the second light beam and is located on the light-receiving means corresponding to the second straight line,

the first region and the second region are located at a distance from the optical axis of the second light beam, the distance being shorter than a distance of the third region and the fourth region from the optical axis of the first light beam, and

a focal shift signal generating means is provided for generating a focal shift signal by using a difference between electric signals from the first region and the second region.

5. An optical pickup device as claimed in claim 4,

wherein,

the focal shift signal generating means generates the focal shift signal according to calculation expressed by:

$$(S1 - S2) + (S3 - S4) \times K$$

where K is a constant, and S1, S2, S3 and S4 are signals from the first, second, third and fourth regions, respectively.

6. An optical pickup device as claimed in claim 4, wherein

a storage means for storing a plurality of focal shift signals in correspondence with a plurality of combinations of the difference between the electric signals from the first region and the second region and the difference between the electric signals from the third region and the fourth region, and

the focal shift signal generating means reads from the storage means the focal shift signal corresponding to the difference between the electric signals from the first region and the second region and the difference between the electric signals from the third region and the fourth region based on the electric signals from the first through fourth regions from the light-receiving means, and outputs the focal shift signal.

7. An optical pickup device as claimed in claim 4,

wherein

the first straight line and the first light beam are identical to the second straight line and the second light beam, respectively.

8. An optical pickup device as claimed in claim 7, wherein

the first region and the second region of the light-receiving means are each formed in a semicircular shape whose chord coincides with the axis of symmetry, and

the third region and the fourth region of the light-receiving means are formed in semicircular annular shapes whose internal circumferences have radii greater than radii of outermost circumferences of the first region and the second region and arranged outside the outermost circumferences of the first region and the second region, respectively.

9. An optical pickup device as claimed in claim 7, wherein

the third region, the first region, the second region and the fourth region of the light-receiving means are each formed in a rectangular shape and arranged parallel in this order in a direction perpendicular to the axis of symmetry.

10. An optical pickup device as claimed in claim 1, wherein

the light-concentrating optical system comprises an object lens of a combination of a plurality of lenses.

11. An optical pickup device as claimed in claim 1, further comprising:

a spherical aberration correcting means for correcting a spherical aberration of the light-concentrating optical system based on the aberration signal from the aberration signal generating means.

12. An aberration correcting method for correcting a spherical aberration by means of the optical pickup device claimed in claim 11, comprising the steps of:

correcting the focal shift of the light-concentrating optical system; and

thereafter correcting the spherical aberration.

13. An aberration correcting method for correcting a spherical aberration by means of the optical pickup device claimed in claim 11, comprising the steps of:

periodically driving the spherical aberration correcting means; and

correcting the spherical aberration of the light-concentrating optical system based on the spherical aberration detected by an aberration detecting means during the driving.

14. An aberration detecting unit comprising:

a light-concentrating optical system for

concentrating a light beam on a reflecting body;

an optical element means for splitting the light beam that has been reflected on the reflecting body and has passed through the light-concentrating optical system;

a light-receiving means for receiving a split light beam from the optical element means and measuring a quantity of light of the split light beam; and

an aberration signal generating means for generating an aberration signal that represents an aberration of the light-concentrating optical system based on a quantity of light of a portion near an optical axis and a quantity of light of a portion separated from the optical axis, the light beam of which has been formed through splitting by the optical element means and incident on the light-receiving means as a first light beam.